



Dart Aerospace Ltd.  
1270 Aberdeen St  
Hawkesbury, ON  
K6A 1K7  
Canada

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**RBE350A93-3316-20**  
**Job Sheet 194433**



Part No: RBE350A93-3316-20

Job Qty: 1 pcs

Part Name: Rotating Star Replacement Wrench



Part Weight: 0 lbs

Status: New

Priority: Medium

Job Created: 5/2/19

Job Tracking No: *order 15539*

Due Date: 6/25/19

Created By: Marie Lajeunesse

Type: SOLD

Description:

Note: DWG-RBE350A93-3316-20 REV:C IPP REV A 18.01.23 NEW ISSUE RQ VERIFIED BY DD

Ship Via:

### Bill of Materials

### Job Routing

| Op No | Operation                   | Qty   | Start Date | Due Date | Standard  |         | Workcenter/Supplier   |           | Sign-off                                                     |
|-------|-----------------------------|-------|------------|----------|-----------|---------|-----------------------|-----------|--------------------------------------------------------------|
|       |                             |       |            |          | Setup Hrs | Run Hrs | Workcenter / Supplier | Lead Time |                                                              |
| 110   | Small Fab - 1               | 1 pcs | 6/25/19    |          | 0.00      | 1.00    | Small Fab - 1         |           | <b>DAS</b><br><b>71</b><br><b>9-89</b><br><i>19-5-13</i>     |
|       |                             |       |            |          |           |         | Small Fab - 2         |           |                                                              |
|       |                             |       |            |          |           |         | Small Fab - 3         |           |                                                              |
|       |                             |       |            |          |           |         | Small Fab - 4         |           |                                                              |
|       |                             |       |            |          |           |         | Small Fab - 5         |           |                                                              |
|       |                             |       |            |          |           |         | Small Fab - 6         |           |                                                              |
|       |                             |       |            |          |           |         | Small Fab - 7         |           |                                                              |
| 120   | QC 5                        | 1 pcs | 6/25/19    |          | 0.00      | 0.00    | QC 5 - 10             |           | <b>DAS</b><br><b>40</b><br><b>9-89</b><br><b>MAY 13 2019</b> |
|       |                             |       |            |          |           |         | QC 5 - 12             |           |                                                              |
|       |                             |       |            |          |           |         | QC 5 - 17             |           |                                                              |
|       |                             |       |            |          |           |         | QC 5 - 18             |           |                                                              |
|       |                             |       |            |          |           |         | QC 5 - 19             |           |                                                              |
|       |                             |       |            |          |           |         | QC 5 - 22             |           |                                                              |
|       |                             |       |            |          |           |         | QC 5 - 24             |           |                                                              |
|       |                             |       |            |          |           |         | QC 5 - 3              |           |                                                              |
|       |                             |       |            |          |           |         | QC 5 - 43             |           |                                                              |
|       |                             |       |            |          |           |         | QC 5 - 49             |           |                                                              |
|       |                             |       |            |          |           |         | QC 5 - 51             |           |                                                              |
|       |                             |       |            |          |           |         | QC 5 - 58             |           |                                                              |
|       |                             |       |            |          |           |         | QC 5 - 68             |           |                                                              |
|       |                             |       |            |          |           |         | QC 5 - 9              |           |                                                              |
|       |                             |       |            |          |           |         | QC 5 - 50             |           |                                                              |
|       |                             |       |            |          |           |         | QC 5 - 30             |           |                                                              |
| 130   | Packaging 3-1 - Stock - B4B | 1 pcs | 6/25/19    |          | 0.00      | 0.00    | Packaging 3 - 1 - B4B |           |                                                              |
|       |                             |       |            |          |           |         | Packaging 3 - 2 - B4B |           |                                                              |
|       |                             |       |            |          |           |         | Packaging 3 - 3 - B4B |           |                                                              |
|       |                             |       |            |          |           |         | Packaging 3 - 4 - B4B |           |                                                              |
|       |                             |       |            |          |           |         | Packaging 3 - 5 - B4B |           |                                                              |
|       |                             |       |            |          |           |         | Packaging 3 - 6 - B4B |           |                                                              |
|       |                             |       |            |          |           |         | Packaging 3 - 7 - B4B |           |                                                              |



Container No: S179942



Part: RBE350A93 - 3316 - 20

Job No: 194433

Serial No/Batch: S179942

Revision: C

Inspector:

Exp Date:

Instructions:

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Date: 05/09/19

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|                |       |         |           |                 |                        |  |
|----------------|-------|---------|-----------|-----------------|------------------------|--|
|                |       |         |           |                 | Packaging 3 - 8 - B4B  |  |
|                |       |         |           |                 | Packaging 3 - 9 - B4B  |  |
|                |       |         |           |                 | Packaging 3 - 10 - B4B |  |
|                |       |         |           |                 | Packaging 3 - 11 - B4B |  |
|                |       |         |           |                 | Packaging 3 - 12 - B4B |  |
|                |       |         |           |                 | Packaging 3 - 13 - B4B |  |
|                |       |         |           |                 | Packaging 3 - 14 - B4B |  |
|                |       |         |           |                 | Packaging 3 - 15 - B4B |  |
|                |       |         |           |                 | Packaging 3 - 16 - B4B |  |
|                |       |         |           |                 | Packaging 3 - 17 - B4B |  |
|                |       |         |           |                 | Packaging 3 - 18 - B4B |  |
|                |       |         |           |                 | Packaging 3 - 19 - B4B |  |
|                |       |         |           |                 | Packaging 3 - 20 - B4B |  |
|                |       |         |           |                 | Packaging 3 - 21 - B4B |  |
|                |       |         |           |                 | Packaging 3 - 22 - B4B |  |
|                |       |         |           |                 | Packaging 3 - 23 - B4B |  |
|                |       |         |           |                 | Packaging 3 - 24 - B4B |  |
|                |       |         |           |                 | Packaging 3 - 25 - B4B |  |
|                |       |         |           |                 | Packaging 3 - 26 - B4B |  |
|                |       |         |           |                 | Packaging 3 - 27 - B4B |  |
|                |       |         |           |                 | Packaging 3 - 28 - B4B |  |
|                |       |         |           |                 | Packaging 3 - 29 - B4B |  |
|                |       |         |           |                 | Packaging 3 - 30 - B4B |  |
|                |       |         |           |                 | Packaging 3 - 31 - B4B |  |
|                |       |         |           |                 | Packaging 3 - 32 - B4B |  |
|                |       |         |           |                 | Packaging 3 - 33 - B4B |  |
|                |       |         |           |                 | Packaging 3 - 34 - B4B |  |
|                |       |         |           |                 | Packaging 3 - 35 - B4B |  |
|                |       |         |           |                 | Packaging 3 - 36 - B4B |  |
| 140 QC 21 - SA | 1 pcs | 6/25/19 | 0.00 0.00 | QC 21 - SA - 21 | DAG                    |  |
|                |       |         |           | QC 21 - SA - 70 | 21                     |  |
|                |       |         |           | QC 21 - SA - 53 | 9-09                   |  |

MAY 13 2019

Part Op 110 - (Small Fab) Pick kit as per DWG.

Descriptions: 120 - QC5- Inspect part completeness to step on W/O)

130 - (Identify as per dwg &amp; Stock Location:\_\_\_\_\_)

140 - (QC21- Final Inspection - Work Order Release)

## Job BOM

| Part / Item         | Component Name                     | Quantity     | Operation         | Container |
|---------------------|------------------------------------|--------------|-------------------|-----------|
| APP-1040-E          | Case                               | 1 pcs (1 ea) | 110-Small Fab - 1 | 5160013   |
| RBE350A93-3316-20-1 | Rotating Star Replacement Wrench   | 1 pcs (1 ea) | 110-Small Fab - 1 | 5160539   |
| RBE350A93-3316-20-5 | Top Foam use in case APP-1040-E    | 1 pcs (1 ea) | 110-Small Fab - 1 | 5160794   |
| RBE350A93-3316-20-7 | Bottom Foam use in case APP-1040-E | 1 pcs (1 ea) | 110-Small Fab - 1 | 5160605   |

## Job Allocations

| Operation         | Component Part      | Required | Inventory | Allocated |
|-------------------|---------------------|----------|-----------|-----------|
| 110-Small Fab - 1 | APP-1040-E          | 1        | 4         | 0         |
|                   | RBE350A93-3316-20-1 | 1        | 19        | 0         |
|                   | RBE350A93-3316-20-5 | 1        | 2         | 0         |
|                   | RBE350A93-3316-20-7 | 1        | 2         | 0         |

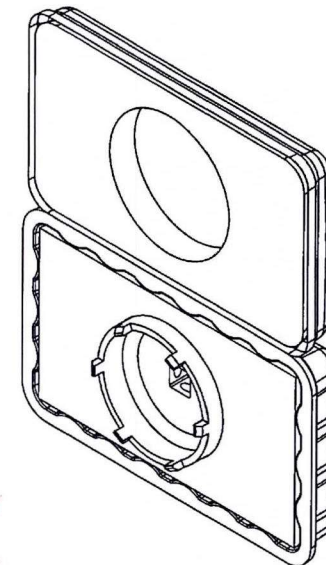
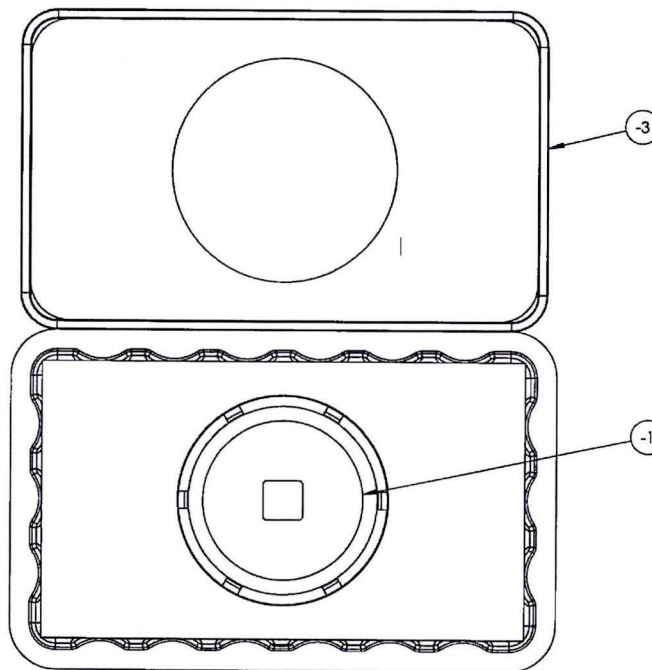
## Part Specifications

Specifications could not be found.

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| ITEM # | QTY | PART #              | TITLE                            | PG | REV. | DESCRIPTION                                                                                                                                                                                                                 | ECN #   | DATE       | BY  | APPROVED |
|--------|-----|---------------------|----------------------------------|----|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------------|-----|----------|
| -1     | 1   | RBE350A93-3316-20-1 | ROTATING STAR REPLACEMENT WRENCH | 2  | 1    | OPENED TOLERANCES ON I.D., O.D., LENGTH, AND TOOTH WIDTH. WAS .232 ±.005. ALSO ADDED BALL LOCK GROOVE TO 1/2 IN. DRIVE.                                                                                                     | -       | 9/28/2009  | WP  | DW       |
| -3     | 1   | RBE350A93-3316-20-3 | PACKAGING ASSY                   | 3  | 1A   | ADDED MISSING Ø.600 DIMENSION.                                                                                                                                                                                              | -       | 9/15/2011  | RJC | RW       |
|        |     |                     |                                  |    | 2    | CHD RADIUS WAS .094 IS .109.                                                                                                                                                                                                | -       | 4/19/2013  | CFS | GE       |
|        |     |                     |                                  |    | 2A   | CHD T/N WAS RBEA93-3316-20 IS RBE350A93-3316-20. CHD TOOL NAME WAS WRENCH, TAIL ROTOR SPIDER NUT IS ROTATING STAR REPLACEMENT WRENCH.                                                                                       | -       | 10/23/2013 | CFS | -        |
|        |     |                     |                                  |    | 3    | UPDATED TO NEW DRAFTING STANDARD. CHD DIM WAS .505 SQUARE IS 2X .508/.503. ADDED DIM 2X .670. CHD MAT'L WAS 4140 Q&T IS 4140/4142. ADDED HEAT TREAT RC 28-32. ADDED FINISH SPEC QMSI-6.2.2, B.O. REV D. ADDED NOTE 2 SHT 1. | 17-0130 | 6/1/2017   | RJC | JAG      |
|        |     |                     |                                  |    | C    | ITEM 1 BECOME -1, PACKAGING ASSY -3 ADDED                                                                                                                                                                                   | 17-800  | 17.12.22   | VM  | ML       |



SHOP COPY  
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SUBJECT TO AMENDMENT  
WITHOUT NOTICE  
WORK ORDER  
NO. 194433 MLS  
19-05-02

NOTES:  
1) MATERIAL: N/A  
2) HEAT TREAT: N/A  
3) FINISH: N/A  
4) SPEC: N/A  
5) BREAK ALL SHARP EDGES: N/A  
6) IDENTIFICATION: N/A

RBE350A93-3316-20 ROTATING STAR REPLACEMENT WRENCH

|                                                                                                                                                                                                                                                                                                   |  |                                                                                                                                                 |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------------------------------------------------------------|--|
| <b>DART</b><br>AEROSPACE                                                                                                                                                                                                                                                                          |  | Hawkesbury, Ontario, Canada                                                                                                                     |  |
| <b>TITLE</b><br>ROTATING STAR REPLACEMENT WRENCH                                                                                                                                                                                                                                                  |  |                                                                                                                                                 |  |
| <b>PART NO.</b><br>RBE350A93-3316-20                                                                                                                                                                                                                                                              |  | <b>REV</b><br>C                                                                                                                                 |  |
| <b>TOOL NO.</b><br>RBE350A93-3316-20                                                                                                                                                                                                                                                              |  | <small>UNLESS OTHERWISE SPECIFIED:<br/>DIMENSIONS ARE IN INCHES<br/>INTERPRET PER ASME Y14.5M-2009<br/>DIMENSIONS APPLY AFTER FINISHING</small> |  |
| <b>INITIALS AND DATE</b>                                                                                                                                                                                                                                                                          |  | <b>TOLERANCES:</b>                                                                                                                              |  |
| DESIGNED BY: VM 17/12/22                                                                                                                                                                                                                                                                          |  | XX ±.008                                                                                                                                        |  |
| DRAWN BY: VM 01/02/2018                                                                                                                                                                                                                                                                           |  | XX ±.01                                                                                                                                         |  |
| CHECKED BY: VM 01/02/2018                                                                                                                                                                                                                                                                         |  | X ±.1                                                                                                                                           |  |
| MFG REVIEW BY: DD 01/02/2018                                                                                                                                                                                                                                                                      |  | SCALE: NTS                                                                                                                                      |  |
| APPROVED BY: ML 01/05/2018                                                                                                                                                                                                                                                                        |  | SHEET 1 OF 5                                                                                                                                    |  |
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Entered: \_\_\_\_\_ Date: \_\_\_\_\_



## WORK ORDER NON-CONFORMANCE / ROUTE UPDATE

NCR No. \_\_\_\_\_

Route update only ☐

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |                        |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------|--|
| Job: _____<br><br>Part No. _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>DISPOSITION</b><br><br>Rework <input type="checkbox"/><br>Scrap <input type="checkbox"/><br>Use-as-is <input type="checkbox"/> | <b>DEPARTMENT/PROCESS</b><br><br><div style="display: flex; justify-content: space-between;"> <div>           Skid-tube <input type="checkbox"/><br/>           Machining <input type="checkbox"/><br/>           Large Fab <input type="checkbox"/> </div> <div>           Cross tube <input type="checkbox"/><br/>           Small Fab <input type="checkbox"/><br/>           Finishing <input type="checkbox"/> </div> <div>           Eng. (Non-AW) <input type="checkbox"/><br/>           Prod. Eng. Coord. <input type="checkbox"/><br/>           Rec/Store/Packaging <input type="checkbox"/> </div> <div>           Engineering <input type="checkbox"/><br/>           Water Jet <input type="checkbox"/><br/>           Supplier <input type="checkbox"/><br/>           Quality <input type="checkbox"/> </div> </div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |                        |  |
| Date :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Sequence #:                                                                                                                       | QTY Affected :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  | MRB (QSI042)           |  |
| Description Work Order Deviation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                   | Disposition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  | Completed By           |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  | Lead hand / Supervisor |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |                        |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  | QC / QA Coordinator    |  |
| <b>Root Cause</b><br><br><div style="display: flex; flex-direction: column; align-items: flex-start;"> <div>Operator <input type="checkbox"/></div> <div>Manufacturing Process <input type="checkbox"/></div> <div>Equip/Tooling <input type="checkbox"/></div> <div>Handling/Preservation <input type="checkbox"/></div> <div>Material <input type="checkbox"/></div> <div>Product Improvement <input type="checkbox"/></div> <div>Process Improvement <input type="checkbox"/></div> <div>Human Factors <input type="checkbox"/></div> </div> |                                                                                                                                   | <b>FAULT CATEGORY</b><br><br><div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%;"> <input type="checkbox"/> Pressure/Forced<br/> <input type="checkbox"/> Bending<br/> <input type="checkbox"/> Crushing<br/> <input type="checkbox"/> Cracks<br/> <input type="checkbox"/> Crimp/Kink/Ripple/Wave/Twist<br/> <input type="checkbox"/> Marks/Chatter<br/> <input type="checkbox"/> Mislabeled         </div> <div style="width: 50%;"> <input type="checkbox"/> Contamination<br/> <input type="checkbox"/> Misaligned/off center<br/> <input type="checkbox"/> BOM/Route<br/> <input type="checkbox"/> Broken/Damage/Defect<br/> <input type="checkbox"/> Incomplete/Unclear Instructions<br/> <input type="checkbox"/> Drill Holes<br/> <input type="checkbox"/> Fit/Function         </div> <div style="width: 50%;"> <input type="checkbox"/> Power Loss/Surge<br/> <input type="checkbox"/> Folio/Program<br/> <input type="checkbox"/> Grain Direction<br/> <input type="checkbox"/> Weld<br/> <input type="checkbox"/> Wrong Stock Pulled<br/> <input type="checkbox"/> Out of Sequence<br/> <input type="checkbox"/> Off-set/Set-up         </div> <div style="width: 50%;"> <input type="checkbox"/> Positioned Wrong<br/> <input type="checkbox"/> Outside Tolerance<br/> <input type="checkbox"/> Drawing<br/> <input type="checkbox"/> Finish<br/> <input type="checkbox"/> Part Lost/Missing<br/> <input type="checkbox"/> Misread         </div> </div> |  |                        |  |
| Other/Details:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |                        |  |